



1984

## Annual Report of the Tennessee Agricultural Experiment Station, 1984

University of Tennessee Agricultural Experiment Station

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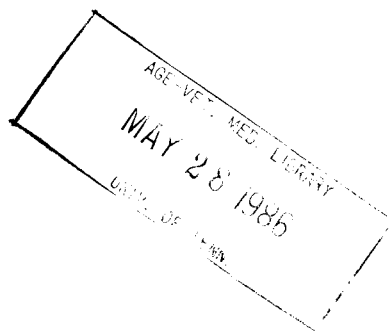
Annual Report of the

*Tennessee  
Agricultural  
Experiment Station  
1984*

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The University of Tennessee  
Knoxville

Ninety-Seventh  
Annual Report  
1984



**Tennessee  
Agricultural Experiment Station**

Edward J. Boling . . . . . President of the University  
W.W. Armistead . . . . . Vice President for Agriculture  
B.H. Pentecost . . . . . Assistant Vice President for Agriculture  
D.M. Gossett . . . . . Dean  
T.J. Whatley . . . . . Associate Dean  
John I. Sewell . . . . . Assistant Dean

**The University of Tennessee  
Knoxville**

# LETTER OF TRANSMITTAL

Knoxville, Tennessee  
January 2, 1985

To His Excellency, Lamar Alexander  
Governor of Tennessee:

SIR: I have the honor transmitting herewith, on behalf of the Board of Trustees of the University of Tennessee, a report of the work and expenditures of the Agricultural Experiment Station for the year 1984.

This report is submitted in accordance with the law requiring that such a report be submitted annually by the administrators of the Experiment Station to the Governor of the State.

Respectfully submitted,  
Edward J. Boling, President

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# **Ninety-Seventh Annual Report of the Tennessee Agricultural Experiment Station 1984**

## **FOREWORD**

Included in this report are listings by departments of the following information:

- 1) Research projects active as of December 31, 1984;
- 2) Research projects terminated during the calendar year, 1984.
- 3) Bulletins, articles, and reports prepared by Experiment Station staff members and published during the calendar year 1984.

In addition, the report contains the financial statement for the Agricultural Experiment Station covering the period July 1, 1983 to June 30, 1984. Also included is a list of the Experiment Station personnel for the calendar year 1984.

## **Active Projects**

As of December 31, 1984, there were 164 Hatch (TN) projects and six state (S) projects. Hatch projects are supported in part with Federal-Grant funds made available by Congress to the Agricultural Experiment Stations of the country under the Hatch Act Amended. State projects are supported entirely by University funds. There were 10 McIntire-Stennis (forestry) projects.

The headquarters of the Tennessee Agricultural Experiment Station is located on the agricultural campus of the University of Tennessee at Knoxville. In addition, there are other research centers which represent soil and climate conditions in the major regions of Tennessee. These other research centers are listed at the end of this report, and their locations are shown on the map on page 5.

## **Projects Terminated**

During 1984, 41 projects were terminated. Reports on these projects have either been published or are being prepared for publication.

## **Publications**

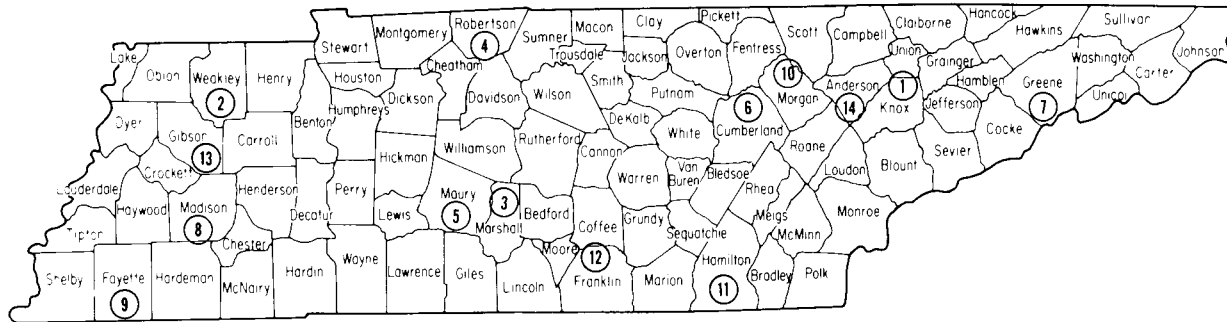
Published reports on research of the Tennessee Agricultural Experiment Station appear in Station Bulletins, in Tennessee Farm and Home Science, as well as in professional and technical periodicals and in various popular publications. There were four Station Bulletins, 11 Research Reports, five International Reports, and one staff paper published during the year. These publications and other technical, semi-technical, and special reports prepared and published during 1984 are listed in this annual report.

**FINANCIAL STATEMENT**  
**July 1, 1983 - June 30, 1984**  
**The University of Tennessee Agricultural Experiment Station**

	<u>HATCH</u>	<u>Reg. Resource</u>	<u>McIntire Stennis</u>	<u>Animal Health &amp; Disease</u>	<u>Federal Grants</u>	<u>Other Funds</u>	<u>Total</u>
<b>Balance June 30, 1983</b>					<b>\$777,984</b>	<b>\$777,984</b>	<b>\$777,984</b>
Revenues	\$3,100,660	\$754,676	\$345,052	\$138,735	\$508,584	\$11,306,991	\$16,154,698
<b>Funds Available</b>	<b>\$3,100,660</b>	<b>\$754,676</b>	<b>\$345,052</b>	<b>\$138,735</b>	<b>\$508,584</b>	<b>\$12,084,975</b>	<b>\$16,932,682</b>
<b>Expenditures:</b>							
Personal Services	\$3,084,394	\$672,230	\$251,277	\$ 43,679	\$258,925	\$ 4,528,685	\$ 8,839,190
Staff Benefits					30,956	2,117,900	2,148,856
Travel	20,356	16,880	10,650	1,494	82,415	214,358	346,153
Equipment	82,100	15,622	5,272	4,579	59,805	793,561	960,939
Land Structures						25,992	25,992
Other Operating	63,547	31,074	29,299	28,117	76,483	3,390,532	3,619,052
<b>Total Expenditures</b>	<b>\$3,250,397</b>	<b>\$735,806</b>	<b>\$296,498</b>	<b>\$ 77,869</b>	<b>\$508,584</b>	<b>\$11,071,028</b>	<b>\$15,940,182</b>
<b>Balance June 30, 1984*</b>	<b>(\$ 149,737)</b>	<b>\$ 18,870</b>	<b>\$ 48,554</b>	<b>\$ 60,866</b>		<b>\$ 1,013,947</b>	<b>992,500</b>

\*Includes Encumbered Obligations

# The University of Tennessee Agricultural Experiment Station



- 1 Knoxville Experiment Station
- 2 Martin Experiment Station

## Branch Stations

- |                                       |   |
|---------------------------------------|---|
| 3 Dairy Experiment Station            | 9 Ames Plantation                       |
| 4 Highland Rim Experiment Station     | 10 Cumberland Forestry Field Station*   |
| 5 Middle Tennessee Experiment Station | 11 Friendship Forestry Field Station*   |
| 6 Plateau Experiment Station          | 12 Highland Rim Forestry Field Station* |
| 7 Tobacco Experiment Station          | 13 Milan Experiment Station             |
| 8 West Tennessee Experiment Station   | 14 Oak Ridge Forest and Arboretum*      |

\*Forestry Experiment Station

## **AGRICULTURAL ECONOMICS AND RURAL SOCIOLOGY**

<b><i>Proj. No.</i></b>	<b><i>Research Project Titles</i></b>
TN 619	Economics of Tobacco Production in Tennessee
TN 626	Alternative Systems of Swine Production
TN 633(S-153)	An Economic Analysis of Alternative Marketing Strategies for Cotton Producers
TN 635	Changing Population and Agriculture in Tennessee, 1970-1980
TN 641	Utilization and Control of Land In and Around Rural Communities in Tennessee
TN 642	An Economic Analysis of Livestock Auction Markets in Tennessee
TN 648(S-166)	The Impact of Changing Costs, Institutions and Technology on the Southern Dairy Industry
TN 651(S-148)	Improving Community Services in Nonmetropolitan Counties in the South
TN 658	Health Care Services in Rural Tennessee
TN 671	Strategies for Improving the Effectiveness of Soil Erosion Control and Rural Water Quality
TN 677	Use of No-Tillage and Other Agricultural Practices by Tennessee Farm Operators
TN 681(S-103)	Regional Advantages in Producing and Marketing Woody Ornamentals
TN 683(S-172)	The Economics of Improving Productivity in the Livestock-Meat Systems in the South
TN 685(S-176)	Marketing Systems for Grains and Soybeans
TN 691	Farm Business Performance



- TN 694(S-178) Structural and Operational Efficiency of the Fruit and Vegetable Production-Marketing System
- TN 699 Business Organization Strategies for Management, Growth, and Intergenerational Transfer - Farm/Business
- TN 713 Economic Evaluation of Technological and Institutional Changes on Farmers in Tennessee
- TN 725(S-190) Disturbances to Price Discovery — Risk Management by Marketing Firms in Southern Agriculture
- TN 736(S-191) Barriers and Incentives to Affordable Housing
- TN 739 Factors Affecting Metropolitan and Nonmetropolitan Bank Performance in Tennessee
- TN 743 The Effects of Changing Cropping Patterns on Agricultural and Rural Incomes in Tennessee
- TN 751 Retail Demand for Tennessee Fresh Fruits and Vegetables
- Projects Concluded in 1984***
- TN 553(S-141) Housing for Low and Moderate Income Families
- TN 554 Rural Economies and the Structure of the Agricultural Production Sector in Tennessee
- TN 603(S-148) Changing Structure of Agriculture: Causes, Consequences, and Policy Implications
- TN 609 Migration and Other Demographic Changes of the Tennessee Rural Population
- TN 654 Alternative Pricing Methods for Tennessee Livestock Producers

***Tennessee Agricultural Experiment Station  
Bulletins and Reports—1984***

Badenhop, M.B. Information Flows and Institutional Activities of Small Farmers in Southeast Asian Countries, International Report No. 4, April.

Badenhop, M.B., Betty Beach, Robert H. Orr and Neal Walker. The Thai Project 1980 End-of-Tour Report, International Report No. 4, April.

Badenhop, M.B. and Ivon E. McCarty. Institutional Development to Meet Changing Agricultural Needs in Thailand, International Report No. 5, June.

Brooker, John R. Consideration Regarding Establishment of a Regional Fresh Fruit and Vegetable Distribution Market in Memphis, Tennessee, Research Report No. 84-07.

Brooker, John R. Fresh Market Cabbage in Tennessee: Production-Marketing Considerations, Research Report No. 84-02.

Orr, Robert. A Framework for Structural Analysis of Thai Communities and Agricultural Cooperatives: A Means for Understanding of Synchronism and Conflict, International Report No. 4, April.

Orr, Robert H. and Neal Walker. Farm Management Research and Extension in Northeast Thailand. International Report No. 5.

Park, William M. World Food Supply: Problems and Prospects, Staff Paper SP-84-01.

Perrigan, Glen and Glen Whipple. Manufacturing Grade Milk Production in Tennessee, Bulletin No. 633, October.

Walker, Neal. Cooperatives in Thailand—Problems, Proposals, and Potentials, International Report No. 4, April.

Whipple, Glen D. Grade A Milk Production in Tennessee, Bulletin 632, October.

### ***Tennessee Farm and Home Science Articles***

Brooker, John R. "Fluctuation in Forward Contracting of Cotton by Tennessee Producers," No. 128.

Hunter, David L. and Luther H. Keller. "Economic Evaluation of Alternative Crop and Soil Management Systems for Reducing Soil Erosion Losses on a Typical West Tennessee Farm," No. 129, January-March.

Leuthold, Frank O. and Cynthia G. Hart. "Views of No-Till Planting by West Tennessee Farmers," No. 132, October-December, pp. 2-5.

### ***Journal Articles***

Brooker, John R. "Economic Analysis of Price Risk Aversion by Tennessee Cotton Producers," Midsouth Journal of Economics.

Markley, Deborah M. "The Impact of Institutional Change in the Financial Services Industry on Capital Markets in Rural Virginia," American Journal of Agricultural Economics, December.

Roberts, Roland K. and William J. Martin. "State-Level Analysis of National Beef Policy: The Use of State Econometric Models," Southern Journal of Agricultural Economics, Vol. 16, No. 2, pp. 63-72, December.

Roberts, Roland K., Gary Vieth and James C. Nolan. "An Analysis of the Impact of Energy Price Escalations During the 1970s on Hawaii Beef Production and Prices," Western Journal of Agricultural Economics, Vol. 9, No. 1, pp. 90-105, July.

Whipple, Glen D. and Morgan Gray. "Welfare Impacts of Alternative Reconstituted Fluid Milk Pricing," North Central Journal of Agricultural Economics, Vol. 6, No. 2, July.

### ***M.S. Theses***

Davis, Neal C. "An Economic Model for Siting Sanitary Landfills," under William M. Park, March.

Hart, Cynthia G. "Adoption of No-Tillage Agriculture by Farmers Attending West Tennessee Field Days in 1982," under Frank O. Leuthold.

Williams, Clayton M. "An Analysis of the Loan Repayment Capacity of Farrow-to-Finish Pork Production," under B.R. McManus, June.

### ***Other Writings***

#### ***Bulletins/Publications***

Brooker, John R., John Adrian and W.J. Free. Computerized Marketing of Fruits and Vegetables in the Tennessee Valley Region, TVA, NFDC, Muscle Shoals, Alabama.

Klindt, Thomas H. and Dorothy Arata. Quality in Graduate Short Courses and Workshops, Tennessee Conference of Graduate School Publication No. 5, September.

Muench, Michael N., Roland K. Roberts and Frank S. Scott. The Economic Viability of Papaya Farms in the Puna District, University of Hawaii Institute of Tropical Agricultural and Human Resources, Research Series No. 27.

Roberts, Roland K., William J. Martin, John C. Roecklein and James C. Nolan. An Econometric Model of the Hawaii Beef Industry and Some of Its Applications, University of Hawaii Institute of Tropical Agricultural and Human Resources, Research Series No. 32.

***Papers Presented and/or Proposed***

Cleland, Charles L. "Study County Selection and Serendipity," Rural Sociology Section, SAAS, Nashville, February.

Davis, Neal C. and William M. Park. "Cost Trade-Offs and the Role of Compensation in Landfill Siting," American Agricultural Economics Association Annual Meeting, Ithaca, New York, August.

Eastwood, David B. "A Re-Examination of Consumer Credit Growth," paper submitted for presentation at the 31st Annual Conference of the American Council on Consumer Interests.

Eastwood, David B. "What Is a Complete Demand System?," paper presented at the 30th Annual Conference of the American Council on Consumer Interests.

Markley, Deborah M. and William M. Park. "The Economic Feasibility of Rural Recycling: A Case Study," submitted as selected paper for 1985 Annual Meetings of American Agricultural Economics Association, Iowa State University, Ames, Iowa.

Park, William M. "Forestry, Agricultural and Urban Competition for Land in the Southeastern United States: Discussion," Conference on Land Retention in the Southeast, sponsored by the Tennessee Valley Authority, Knoxville, March.

Park, William M. and David G. Sawyer. "Cost Sharing and Cost Effective Soil Erosion Control Policy," American Agricultural Economics Association Annual Meeting, Ithaca, New York, August.

Park, William M. and David G. Sawyer. "Variable Cost Sharing as a Targeting Strategy Within an ACP Water Quality Project," Southern Agricultural Economics Association Annual Meeting, Nashville, February.

Roberts, Roland K. and William J. Martin. "The Effects of Alternative Beef Import Quota Regions on the Beef Industries of the United States and Hawaii," paper presented at the Annual Meeting of the American Agricultural Economics Association, Ithaca, New York, August 5-8.

### ***Reports/Proceedings***

Badenhop, M.B. "How Much Does It Cost to Produce a Rooted Cutting?," American Nurserymen, Propagation Issue, October 15.

Cox, Linda, Roland K. Roberts and James C. Nolan. "Hawaii Consumers' Demand for Beef," Proceedings: 19th Mealani Beef Cattle Field Day, University of Hawaii Institute of Tropical Agricultural and Human Resources, Research Extension Series No. 50, pp. 1-5.

Eastwood, David B. "What Is a Complete Demand System?," Proceedings of the 30th Annual Conference of the American Council on Consumer Interests, 211-14.

Klindt, Thomas H. and William M. Park. "Forestry and Agricultural Competition for Land in the Southeast," Retention of Farmland, SNREC Publication No. 19, July.

Phillips, T.D. and M.B. Badenhop. "South's Competitive Advantage in Producing Junipers," Proceedings of SNA Research Conference, Southern Nurserymen's Association, Nashville.

Smith, George F. and Thomas H. Klindt. Agriculture in Tennessee: Impacts, Trends and Opportunities. A Report to William H. Walker III, Commissioner of Agriculture, S.P. 267.

## **AGRICULTURAL ENGINEERING**

<b><i>Proj. No.</i></b>	<b><i>Research Project Title</i></b>
TN 560(S-144)	Animal Waste Utilization and Treatment Systems
TN 622	Energy Use Analysis and Application of Conservation Practices on Tennessee Farms

TN 653(S-160)	Energy Reduction for Crop Production Systems
TN 661	The Application of Engineering Principles to Animal and Biological Systems
TN 662	Physical Properties of Blended Yarns and Their Constituent Fibers
TN 680(S-174)	Effects, Mechanisms, and Control of Erosion and Sediment from Agricultural and Forest Land
TN 701	Analysis of Sheet Erosion Detachment and Transport Processes
TN 709	On-Site Wastewater Renovation
TN 740	Catalysts for Environmental Quality Control in Animal Confinement Facilities
TN 741	Labor Reduction in Harvesting, Handling and Curing Air Cured Tobacco
TN 748	A Synergistic Energy System for Farm Structures Using an Earth Tube Coupled with a Heat Pump
TN 753(S-195)	Engineering and Management Systems for Cotton Production, Harvesting, and Processing
TN 755(S-196)	Processing and Storage of Southern Agricultural Commodities
TN 759	Mechanized Production of Selected Vegetable Crops in Tennessee
TN 765(S-202)	Utilization of Animal Waste as Energy and Nutrient Sources in Warm, Humid Climates
TN 766(S-197)	Optimize Production Efficiency of Animal Housing Systems in the Southern Region

***Projects Concluded in 1984***

TN 543	Management Practices for Erosion and Sedimentation Control
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- TN 546(S-134)      Engineering Systems and Energy Needs for Cotton Production
- TN 577              Curing, Storing and Feeding High Value Hay in Large Packages
- TN 587              Use of the Earth as an Energy Source or Sink for Heating and Cooling Buildings
- TN 602              Energy Reduction for On-Farm Processing of Agricultural Products
- TN 604(S-149)      Optimize Efficiency of Energy Utilization in Agricultural Housing Systems
- TN 629              Energy Conservation in Harvesting and Curing Air Cured Tobacco

***Bulletins, Articles, and Reports—1984***

- Bledsoe, B.L. Solar Energy Use - State of the Art and Future Goals. Abstracts and Final Program. WATTec 11th Annual Energy Conference and Exhibition. Knoxville, TN. 1984.
- Bledsoe, B.L., H.D. Baxter, J.R. Owen and M.J. Montgomery. Alfalfa Orchardgrass Stored as Large Round Bale Silage. Supplement 1, Journal of Dairy Science V67:224. 1984.
- Bledsoe, B.L. A Solar-Heated, Forced Air Hay Dryer with Other Uses. Tennessee Farmer 34(4):6,7,16,17. 1984.
- Duckett, K.E. and B.C. Goswami. A Multi-stage Apparatus for Characterizing the Cyclic Torsional Fatigue Behavior of Single Fibers. Textile Res. J., 54, 43-46. 1984.
- Duckett, K.E. and J.R. Kennedy. Real-time Characterization of Gossypol on Ciliary Function. Proceedings of the 1984 Beltwide Cotton Production Research Conferences, Atlanta, GA, 169-171. 1984.
- Freeland, R.S., F.D. Tompkins, L.R. Wilhelm, W.E. Hart, and J.B. Wilkerson. Instrumentation for In-field Energy Measurements of PTO-driven Implements. Paper No. 84-1630. American Society of Agricultural Engineers. 1984.

- Mote, C.R. Evaluation of the Potential of Catalytic Converters for Ammonia and Odor Control in Poultry Houses. Poultry Science 63:2364-2367. 1984.
- Mote, C.R. Pressurized Distribution for On-site Domestic Wastewater-Renovation Systems. Agricultural Experiment Station Bulletin 870. University of Arkansas, Fayetteville, AR. 1984.
- Shelton, C.H. Development of a Soil and Water Conservation Research and Demonstration Watershed for Nepal End-of-Tour Report 1983. UTIA International Report No. 8. 50 pp. 1984.
- Shelton, C.H., D.D. Tyler and R.D. von Bernuth. Prevention of Gully Formation and Associated Water Degradation in West Tennessee. Tennessee Water Resources Research Center Research Report No. 102. 39 pp. 1984.
- Shelton, C.H., R.D. von Bernuth, and S.P. Rajbhandari. A Non-intermittent Rainfall Simulator for Gully Erosion Studies. Presented and distributed at Summer Meeting of American Society of Agricultural Engineers, Knoxville, TN. June 1984.
- Tompkins, F.D. Highlights of the 1984 Agricultural Engineers' Regional Research Committee Meeting. Proceedings of 1984 Beltwide Cotton Production-Mechanization Research Conference. pp. 49-51. 1984.
- von Bernuth, R.D. and J.R. Gilley. Sprinkler Droplet Size Distribution Estimation from Single Leg Test Data. Transactions of the ASAE 27(5):1435-1441. 1984.
- Wilhelm, L.R. and J.B. Wilkerson. Use of LOTUS 1-2-3 on the IBM PC for Agricultural and Engineering Applications. Paper No. 84-5517. American Society of Agricultural Engineers, St. Joseph, MI. 1984.

## ANIMAL SCIENCE

<b><i>Proj. No.</i></b>	<b><i>Research Project Titles</i></b>
TN 529	Flexibility in Beef Production from Forage in Tennessee
TN 538	Effect of Heterosis on Nutritional Efficiency of Beef Production
TN 598	Adrenocorticotrophin Involvement in Stress Related Early Embryonic Mortality in Swine



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TN 607	Development of Low Protein Broiler Diets
TN 614	The Effect of Ketone Bodies on Lipolysis During Fasting, Pregnancy, and Lactation in Ruminants
TN 627	Genetic Variation in Nutrient Intake and Utilization of Grazing Beef Females as Related to Genotype x Environment Interaction
TN 631	Factors Influencing Market-Transit and Post-Transit Health and Performance of Southeastern Feeder Calves
TN 639(S-10)	Breeding Methods for Beef Cattle in the Southern Region
TN 640(S-49)	Genetic Methods of Improving Dairy Cattle for the South
TN 643	Evaluation of Various Forage Systems in Reducing Cost of Milk Production
TN 644	Effects of Confinement and Nutrition of Lactating and Dry Cows on Cow Health and Performance
TN 657	Utilization of Conventional and By-Product Feeds in Total Mixed Rations for Dairy Cattle
TN 667(S-121)	Etiology and Control of Hypomagnesemic Tetany in Ruminants Utilizing Cool Season Grasses
TN 670	The Effect of Different Kinds of Pasture and Grain Feeding Periods on Beef Carcass Quantitative and Qualitative Traits and Palatability Characteristics (in cooperation with Food Technology and Science Dept.)
TN 683(S-172)	The Economics of Improving Productivity in the Livestock Meat Systems in the South
TN 704	Improvement of Production Efficiency in Straightbred Beef Herds Through Heifer Selection
TN 707	Management and Productivity of Fungus-free and Fungus-infested Fescue Pastures

- TN 723(S-133) Genetic-Physiology Mechanisms Associated with Nutrient Utilization in Poultry
- TN 728 Predictive Criteria for Reproductive Capacity in the Beef Heifer
- TN 731(S-145) Nutrition and Management of Swine for Increased Reproductive Efficiency
- TN 732 Light Stress and Cardiovascular Abnormalities in Broilers
- TN 733 The Maintenance of Pregnancy in the Cow: Fetal-Maternal Interactions
- S 90 Use of Highly Prolific Breed x Mutton Breed Crosses to Improve Lamb Production in Tennessee

***Projects Concluded in 1984***

- TN 511(S-131) Eggshell Quality in Avian Species
- TN 528 Factors Affecting Nutrient Consumption and Digestibility of Grazed and Harvested Forages
- TN 535 Absorption in Mineral in Large Animals
- TN 559(S-145) Nutritional Systems for Swine to Increase Reproductive Efficiency
- TN 563 Management of Purchased Feeder Pigs
- TN 586 Magnesium-Potassium-Carbohydrate-Hormonal Interrelationships to Hypomagnesemia in Ruminants
- TN 630 Improved Sorting Techniques for Plain Feeder Calves
- TN 637 Alternative Systems of Swine Production
- TN 673 Changes in Platelets and Hormones in Pregnant or Lactating Ewes

***Bulletins, Articles, and Reports—1984***

- Al-Dabbagh, B.K., N. Ramsey, C.K. Reynolds, J.K. Miller. 1984. Hypokalemia and hypoglycemia in pregnant ewes fed a semipurified diet. *J. American College of Nutr.* 3:286.
- Baxter, H.D., M.J. Montgomery, J.R. Owen. 1984. Comparison of soybean-grain sorghum silage with corn silage for lactating cows. *J. Dairy Sci.* 67:88.
- Bell, B.R. 1984. Economic consequences of sire selection for type by commercial dairymen. *J. Dairy Sci.* 67 (Supl. 1):192.
- Bell, M.D., L. Safley, J.B. McLaren, T. Johnson. 1984. Effect of magnesium supplements on plasma minerals in beef cattle. *J. An. Sci.* 59 (Supl. 1):29.
- Benner, D.R., W.G. Bergen, J.C. Waller. 1984. Composition of gain and protein turnover in heifers implanted with Trenbolone acetate. *J. An. Sci.* 59 (Supl. 1):128.
- Bettison, L.G., J.B. McLaren, F.D. Kirkpatrick. 1984. Relationship among live and carcass traits and within-class variances in show steers allotted to class by hip height. *J. An. Sci.* 59 (Supl. 1):59.
- Bratton, G.R., L.B. Sasser, G.G. Hall, J. Zmudski. 1984. Absorption and tissue distribution of lead in Thiamin-Replete and Thiamin-Deficient rats. *J. Nutrition* 114:1816-1825.
- Breau, W.C. and S.P. Oliver. 1984. Mammary involution following infusion of concanavalin A or phytohemagglutinin. *J. Dairy Sci.* 67:174.
- Breau, W.C. and S.P. Oliver. 1984. *In vitro* growth inhibition of mastitis bacteria by mammary secretion obtained during early involution. *J. Dairy Sci.* 67:175.
- Brooks, II, E.D., F.B. Masincupp, J.P. Hitchcock, R.L. Freeland. 1984. Effect of feeder pig grade and body type on performance, growth parameters and carcass characteristics. *J. An. Sci.* 59 (Supl. 1):196.
- Bryson, W.L., W.T. Butts, D.O. Onks, and J.W. Holloway. 1984. Relationships between preweaning characteristics of cow-calf pairs and calf characteristics at slaughter. *J. An. Sci.* 59 (Supl. 1):184.

- Bushe, T., S.P. Oliver, R.E. Scannell. 1984. Changes in milk yield and composition following intermittent or abrupt milk cessation. *J. Dairy Sci.* 67:168.
- Butts, W.T., J.R. McCurley, H. Hupp, and M. Koger. 1984. Comparison of cow and progeny traits of Senepol x Angus and Brahman x Angus cows. *J. of An. Sci.* 59 (Suppl. 1):47.
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- Butts, W.T., D.O. Onks, J.B. Need, and J.W. Holloway. 1984. Relationships between traits of cow-calf pairs and a measure of partial efficiency. *J. An. Sci.* 59:1176-1184.
- Butts, W.T., J.R. McCurley, E.R. Lidvall, W.R. Backus. 1984. Prediction of carcass traits determining value from live animal observations. *J. An. Sci.* 59 (Suppl. 1):372.
- Butts, W.T., J.R. McCurley, K.P. Bovard. 1984. Growth patterns of Angus, Hereford and Shorthorn Cattle. II. Relationship of growth patterns of dams with progeny performance. *J. An. Sci.* 59:1205-1212.
- Crawford, L, K.R. Robbins, J.W. Finley. 1984. Bioavailability of some oxidized cystine derivatives. *Nutrition Reports International* 29:791-796.
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## CHILD AND FAMILY STUDIES

<i>Proj. No.</i>	<i>Research Project Titles</i>
TN 623	The Familial Antecedents of Adolescent Independence

- TN 628(S-171) Dynamics of Life Plans and Attainment of Low-Income Youth: A Longitudinal Analysis

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## ENTOMOLOGY AND PLANT PATHOLOGY

<i>Proj. No.</i>	<i>Research Project Titles</i>
TN 571	Susceptibility of Cotton Cultivars to Seedling Pathogens
TN 573	Control of Tobacco Insects
TN 595	Etiology Ecosystem Dynamics and Control of Soybean Diseases
TN 624(S-157)	Tactics for Management of Soybean Pest Complexes
TN 625(S-154)	Variability of Root-knot and Cyst Nematodes and Factors Influencing their Population Dynamics
TN 663	Investigation of the Leaf Rust Diseases of Snapbeans
TN 666	Biological Control of Scale Insects
TN 672	Ecology and Management of Cotton Insects
TN 92(S-85)	Pesticide Impact Assessment Research and Data Analysis
TN 693	Pasture and Forage Insect Pest Ecology and Control
TN 700(S-181)	Integrated Arthropod Management for Livestock and Poultry in the Southern Region
TN 714	Economic Thresholds, Toxicology and Management of the Fall Armyworm and European Corn Borer in Field Corn

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| TN 715        | The Ecological and Physiological Aspects of the Spread of <i>Moraxella bovis</i> by <i>Musca autumnalis</i> |
| TN 717        | Insect Pest Management for Vegetable Crops  |
| TN 719        | Distribution and Ecology of Phytoparasitic Nematodes in Tennessee   |
| TN 722        | Viruses of Small Grains   |
| TN 726(S-186) | Management of Soil Microorganisms Affecting the Health and Vigor of Plants                                  |
| TN 730(S-192) | Biological Control of Selected Arthropod Pests and Weeds through Introduction of Natural Enemies            |
|               | <b><i>Projects Concluded in 1984</i></b>  |
| TN 557        | Susceptibility of Cotton Cultivars to Seedling Pathogens  |
| TN 578        | Etiology and Control of Small Grain Diseases  |
| TN 580        | Diseases of Ornamentals and Nursery Crops   |
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## ENVIRONMENTAL PRACTICE

### Proj. No.

TN 762 AHD

### Research Project Titles

Biochemical Mechanisms of Fescue and Endotoxin Induced Agalactia

## FOOD TECHNOLOGY AND SCIENCE

**Proj. No.****Research Project Titles**

TN 634	Utilization of Proteins and Fats from Unconventional Sources in Manufactured Meat Products
TN 647(S-161)	Maximizing the Use, Nutritive Quality and Consumer Acceptance of Sweet Potatoes and Their Products
TN 659	Improvement of Honey Produced in Tennessee
TN 670(S-123)	Marketability and Acceptability of Beef Produced Under Forage and Forage-Grain Management Systems
TN 676	Evaluation of the Quality of Fresh and Processed Fruit
TN 698	Nutritive and Quality Evaluation of the Southern Pea ( <i>Vigna unguiculata</i> ) and Some of Its Products
TN 702	The Use of Sodium Substitutes in the Manufacture of Dairy Products
TN 721	Characterization of Antimicrobials in Foods
TN 727	Microbiological Quality and Safety of Processed Foods
TN 729	Evaluation of Tennessee Fresh and Processed Vegetables
S 88	Pesticides in/on Raw and Processed Foods
S 89	Processing Methods for Dairy Products: Efficiency and Relationship to Product Quality
<b>Projects Concluded in 1984</b>	
TN 592	Control of Aflatoxin and Related Mycotoxins in Agricultural Commodities Currently Processed in Finished Foods
TN 596	Lipids and Their Relationship to Food Quality
TN 600	Physical, Chemical and Histological Traits of Muscle Associated with Composition and Palatability



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<b>Proj. No.</b>	<b>Research Project Titles</b>
TN 599	Applied Physiology of Economically Important Fishes
TN 632(S-23)	Breeding Strategies for Genetic Improvement of Commercial Forest Trees in the South
TN 660	Game Fish Management in Tennessee Waters
TN 668(S-168)	Warmwater Aquaculture
M-S 35	Containerized and Nursery Culture of Forest Tree Seedlings
M-S 36	Effects of Air Pollution on Radial Growth and Wood Density of Trees

- M-S 37 Wildlife Population Responses to Forest Management Practices in the Southern Appalachian Forests
- M-S 38 Biometrical Procedures for Tennessee Forest Management
- M-S 39 The Impact of Habitat Changes on Wildlife Populations in Southeastern Forests
- M-S 40 Marketing of Tennessee's Timber Products
- M-S 41 Genetic Improvement of Selected Hardwood and Coniferous Trees
- M-S 42 Silviculture Practices to Enhance Forest Productivity in Tennessee
- M-S 43 Visual Impacts of Vegetation Management on Forest Recreation
- M-S 44 Cytogenetic Studies of Hardwood and Coniferous Forest Trees
- S 30 The University of Tennessee Arboretum
- S 91 Responses of Wildlife to Habitat Modification on Forests and Associated Lands in Tennessee

***Projects Concluded in 1984***

- TN 601(S-151) Reclamation of Drastically Disturbed Soils
- M-S 28 Wood Quality Evaluation by Gamma-Ray Densitometry
- M-S 29 Economic Impact of Death Taxes on Tennessee's Timber Resources
- M-S 30 Effects of Manipulating Forest Habitats Upon the Physical Condition of Bobwhite Quail
- M-S 31 Cultural Techniques for Improving the Survival and Growth of Trees

- M-S 32 Cooperative Hunting Programs on Small, Private Forests in Tennessee
- M-S 33 Visual Preferences of Recreationists During On-Site Engagements in Forest Environments
- M-S 34 Identifying and Analyzing Forest Resource Futures

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**MICROBIOLOGY****Proj. No.****Research Project Titles**

TN 687

Development of Potential Enteric Coronavirus Vaccine Sources Using Recombinant DNA

TN 688

Mechanisms of Bacterial Pathogenesis in Respiratory Disease of Swine

TN 744

An Infected Cell Membrane Protein as a Cross Protective Vaccine for Alphaviruses

**NUTRITION AND FOOD SCIENCES****Proj. No.****Research Project Titles**

TN 572

Factors Affecting Food Habits of Adolescents and Young Adults

TN 605

Nutritional Health of Adolescent Females

TN 689

Effect of Feed Restriction, Exercise and Age on Fat Synthesis, Body Composition and Survival of Rats

TN 690

Microwave Heating: Effects on Physical, Chemical and Sensory Properties of Selected Foods

TN 720

Functionality of Barley Flour in Whole-Grain Yeast Bread



- TN 734            Effect of Dietary Sulfur on Analgesia
- TN 735            Effect of Diet on the Metabolism of Mercury
- TN 745            Carnitine Nutriture in Chronic Alcoholism
- TN 746            Human Erythrocyte Nak-AT pase, Hypertension and Diet
- TN 750            Changing Dietary Behavior Via Nutrition Education

***Projects Concluded in 1984***

- TN 611            Interrelationship Between Food Restriction and Metabolism of Drugs and Chemicals
- TN 655            Effect of Dietary Sulfur on Drug Efficacy
- TN 656            Effect of Dietary Sulfur on the Formation and Accumulation of Polyamines

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## ORNAMENTAL HORTICULTURE AND LANDSCAPE DESIGN

<i>Proj. No.</i>	<i>Research Project Titles</i>
TN 620	Evaluation of New Cultivars, Culture and Mechanical Practices in Turfgrass
TN 621	Pesticide Evaluations and Their Effects on Turfgrass
TN 703	Propagation of Ornamental Plants
TN 706	Bedding Plant Production Systems and Varietal Evaluations
TN 708	Chemical Control of Plant Growth in Florists' Crops
TN 711	Field Nursery Production Systems
TN 712	Nursery Container Plant Production Systems
TN 716	Post Harvest Handling of Nursery Stock
TN 747	Histochemistry and Ultrastructure of Idioblasts in the Outer Integument of Cotton Ovule ( <i>Gossypium hirsutum</i> )

### *Projects Concluded in 1984*

TN 584	Histochemical Characterization of Cytoplasmic Globules in Plants
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- Callahan, L.M. Performance of Kentucky bluegrass cultivars under lawn conditions. Turf & Grounds Maint. Newsletter. U.T. Agr. Ext. Ser. p. 2-4.
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- Callahan, L.M. Bentgrass performance trials for golf greens in Tennessee. Turf & Grounds Maint. Newsletter. U.T. Agr. Ext. Serv. p. 15-17.
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## PATHOBIOLOGY

<i>Proj. No.</i>	<i>Research Project Titles</i>
TN 669 (S-169)	Influences of Immunological Factors on Neonatal Diseases in Food Producing Animals and Horses
TN 686	Role of Bovine Virus Diarrhea Virus Vaccine Strains in Bovine Respiratory Tract Disease
TN 738	Antibody Response in the Bovine Lower Respiratory Tract to Inhaled <i>Pasteurella Hemolytic</i>
TN 764 AHD	Internal Parasites in Dairy Replacement Heifers in Tennessee: Epidemiology and Strategic Control

## PLANT AND SOIL SCIENCE

<i>Proj. No.</i>	<i>Research Project Titles</i>
TN 406	Small Grain Improvement Through Breeding (Wheat, Oats, Barley, and Rye)
TN 408	Corn Improvement
TN 414	Field Crop Variety Evaluation
TN 428	Soil Survey and Its Relation to Behavior of Different Soils Under Various Uses
TN 444	Forage Crops Ecology and Management
TN 476	Soybean Breeding
TN 561	Crop Yield as Affected by Plant Environment
TN 562	Effect of Soil, Soil Fertility Level, Added Nutrients, and Season on Crop Yield
TN 564	Effects of Applied Wastes on Soils and Crops
TN 565	Availability of Secondary Nutrients in Tennessee Soils
TN 566	Evaluation and Breeding of Forage Legumes

TN 570	Cotton Production Practices
TN 574	Cotton Seed and Fiber Development
TN 575	Plant Response to Herbicides and Antidotes
TN 576	Plant Growth Regulator Effects on Fruit, Vegetable and Agronomic Crops
TN 579	Forage Crop Quality under Different Managements & Environments
TN 582	Vegetable Crop Production
TN 589	The Effects of Soil pH Levels on Crop Growth
TN 591	Breeding for Disease Resistance in Dark Tobacco
TN 597	Development and Evaluation of Rootstocks for Peaches (contributing to Regional Project S-97)
TN 610	Grape Germ Plasm Evaluation for Enological Utilization (contributing to Regional Project S-142)
TN 612	Significance and Distribution of Mineral Components in Southern Soils (contributing to Regional Project S-152)
TN 618	Fruit Crop Production
TN 638	Weed Control in Forage Crops
TN 645	Germplasm Development in Cool Season Forage Grasses
TN 649	Field Crop Responses to Plant Nutrient Applications on Soils
TN 652	Influence of Crop Herbicide Management on Weed Population Dynamics and Subsequent Crop Physiology (contributing to Regional Project S-159)
TN 678	Mycotoxins of Corn and Other Feed Grains (contributing to Regional Project S-175)



- TN 679      Rootstocks and Interstem Effects on Pome and Stone  
(contributing to Regional Project NC-140)
- TN 684      Agricultural Meteorology and Climatology for  
Production in the Southern Region (contributing to  
Regional Project S-173)
- TN 692      Weed Control in Field and Horticultural Crops
- TN 695      Cellular and Molecular Genetics for Crop  
Improvement (contributing to Regional Project S-179)
- TN 696      Biology, Epidemiology, and Control of Viruses and  
Mycoplasma-Like Organisms Causing Diseases of  
Corn and Sorghum (contributing to Regional Project  
S-70)
- TN 697      Plant Germplasm - Its Introduction, Maintenance and  
Evaluation (contributing to Regional Project S-9)
- TN 705      Life History, Population Dynamics, and Interference:  
A Basis for Understanding Weed Biology (contributing  
to Regional Project S-183)
- TN 710      Quantifying Past Erosion and Evaluation Erosion and  
Cover Crop Effects on Yield
- TN 718      Burley Tobacco Genetics, Breeding and Cultural  
Practices
- TN 737      Genetic and Environmental Factors Affecting  
Response of Soybeans to Acid Rain
- TN 757      Role of Legume Cover Crops in Conservation Tillage  
Production Systems (contributing to Regional Project  
S-201)

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## RURAL PRACTICE

### Research Project Titles

TN 650 (NC-107) Bovine Respiratory Diseases

## TEXTILES, MERCHANDISING, AND DESIGN

### Research Project Titles

TN 646      Effects of Functional Finishes on Comfort and Protection of Consumers

TN 664 Integrated Design Research for Household Energy Conservation

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Leonas, Karen K. and Jacquelyn O. DeJonge. "The Effect of Functional Finish Barriers to Pesticide Penetration." International ASTM Symposium on Performance of Protective Clothing, Proceedings. July, 1984.

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Case, F. Duncan. "Design Implications of Living with Passive Solar Homes." *Journal of Architectural and Planning Research*. January, 1984.

## **STATION PERSONNEL**

**The University of Tennessee  
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Programmer/Analyst

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 B.R. Bell, Assistant Professor  
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 Robert Cato, Graduate Research Assistant  
 Allison H. Climer, Graduate Research Assistant  
 Joseph W. Covington, Graduate Research Assistant  
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 J.D. Gresham, Associate Professor  
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 Teri L. Ingle, Graduate Research Assistant  
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David Keltner, Graduate Research Assistant  
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 R.A. Reynolds, Research Associate  
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 H.V. Shirley, Professor  
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 J.D. Smalling, Assistant Professor  
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 Janeen D. Ward, Graduate Research Assistant  
 Kimberly Yost, Research Assistant  
 Kenneth Zanzalari, Graduate Research Assistant

<sup>1</sup>In cooperation with U.S. Department of Agriculture.

## **CHILD AND FAMILY STUDIES**

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of Department

Celia Ferguson, Graduate Research  
Assistant

Gary W. Peterson, Assistant  
Professor

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Bonnie P. Riechert, Assistant  
Communications Specialist

Maurine E.P. Taylor, Assistant  
Communications Specialist

## **ENTOMOLOGY AND PLANT PATHOLOGY**

Carroll J. Southards,  
Professor and Head of  
Department

Ernest C. Bernard, Associate  
Professor

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Professor, Jackson, TN

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Kimberly F. Goode, Graduate  
Research Assistant

James W. Hilty, Professor

Leander F. Johnson, Professor

Lyle E. Klostermeyer, Assistant  
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Paris L. Lambdin, Professor

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Assessment Coordinator

Joyce A. Verminski, Graduate  
Research Assistant

Lawrence D. Young, Assistant  
Professor, Jackson, TN<sup>1</sup>

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## **ENVIRONMENTAL PRACTICE**

Jimmy B. Jones, Professor and Head of Department

Clint D. Lothrop, Assistant Professor

Hynam D. Kitchen, Dean, College of Veterinary Medicine

## FOOD TECHNOLOGY AND SCIENCE

- |  |  |
|--|--|
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| J.C. Bolton, Graduate Research Assistant     | S.L. Melton, Professor                     |
| J.L. Collins, Professor                      | D.K. Moore, Graduate Research Assistant    |
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| M.L. Godfrey, Graduate Research Assistant    | E. Rico-Munoz, Graduate Research Assistant |
| C.D. Holden, Graduate Research Assistant     | M.J. Riemann, Associate Professor          |
| H.O. Jaynes, Professor                       | O.G. Sanders, Instructor                   |
| T.L. Jenkins, Graduate Research Assistant    | D.W. Sykes, Graduate Research Assistant    |

## FORESTRY, WILDLIFE AND FISHERIES

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| Rebecca A. Benda, Graduate Research Assistant           | J.H. Fowler, Graduate Research Assistant             |
| J.J. Beringer, Graduate Research Assistant              | J.P. Groton, Jr., Graduate Research Assistant        |
| A.J. Brody, Graduate Research Assistant                 | W.E. Hammitt, Associate Professor                    |
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| A.P. Clevenger, Graduate Research Assistant             | Cassandra L. Hohanshelt, Graduate Research Assistant |
| B.L. Dearden, Associate Professor                       | M.L. Hughes, Graduate Research Assistant             |
|   | P.I. Kalla, Graduate Research Assistant              |

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C.D. McDonald, Research Associate	S.E. Schlarbaum, Assistant Professor
Kathlyne A. McGee, Graduate Research Assistant	T.R. Smith, Graduate Research Assistant
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W.G. Minser III, Research Associate	G.P. Tanner, Graduate Research Assistant
Tanya A. Minton, Graduate Research Assistant	W.J. Watson, Graduate Research Assistant
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G.C. Viglietti, Graduate Research  
Assistant  
A.A. White, Graduate Research  
Assistant

G.L. White, Graduate Research  
Assistant  
J.E. Wright, Graduate Research  
Assistant

## ORNAMENTAL HORTICULTURE AND LANDSCAPE DESIGN

G.D. Crater, Professor and Head  
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T.E. Daly, Graduate Research  
Assistant  
E.T. Graham, Associate Professor  
K.A. Lawton, Graduate Research  
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S.E. Svenson, Graduate Research  
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D.A. Graves, Graduate Research  
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## RURAL PRACTICE

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## TEXTILES, MERCHANDISING, AND DESIGN

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## PERSONNEL CHANGES

### *Appointments*

- C.D. Bacon, Graduate Research Assistant in Food Technology and Science, June 1, 1984
- Charles W. Becker, Graduate Research Assistant in Forestry, Wildlife, and Fisheries, January 1, 1984
- R. Berger, Graduate Research Assistant in Nutrition and Food Sciences, July 1, 1984
- Jeffrey J. Beringer, Graduate Research Assistant in Forestry, Wildlife, and Fisheries, June 1, 1984
- Bickel, Julia A., Graduate Research Assistant in Entomology and Plant Pathology, September 17, 1984
- J.C. Bolton, Graduate Research Assistant in Food Technology and Science, September 1, 1984
- Barbara Butler, Senior Research Assistant in Animal Science, November 5, 1984
- R.B. Cantrell, Graduate Research Assistant in Agricultural Engineering, July 1, 1984
- C.J. Catanzaro, Graduate Research Assistant in Ornamental Horticulture and Landscape Design, September 17, 1984
- Allison H. Climer, Graduate Research Assistant in Animal Science, June 1, 1984
- Joseph W. Covington, Graduate Research Assistant in Animal Science, January 1, 1984
- T.E. Daly, Graduate Research Assistant in Ornamental Horticulture and Landscape Design, September 13, 1984
- Carleton S. Davis, Graduate Research Assistant in Agricultural Economics, September 17, 1984
- Dianne J. Dawes, Graduate Research Assistant in Animal Science, September 1, 1984
- C.L. Dyer, Associate Professor in Textiles, Merchandising, and Design, September 1, 1984
- David B. Eastwood, Associate Professor in Agricultural Economics, September 1, 1984
- B.L. Emerton, Graduate Research Assistant in Agricultural Engineering, September 1, 1984
- Robert G. Epperson, Graduate Research Assistant in Forestry, Wildlife, and Fisheries, August 20, 1984
- Kevin W. Ferguson, Graduate Research Assistant in Agricultural Economics, September 17, 1984
- Jeff L. Ferrill, Graduate Research Assistant in Agricultural Economics, September 17, 1984
- James C. Forcherio, Graduate Research Assistant in Animal Science, September 10, 1984
- John H. Fowler, Graduate Research Assistant in Forestry, Wildlife, and Fisheries, September 15, 1984
- Greer Litton Fox, Professor and Head of Department, Child and Family Studies, July 1, 1984
- M.L. Godfrey, Graduate Research Assistant in Food Technology and Science, August 1, 1984

- G.A. Gaskin, Graduate Research Assistant in Nutrition and Food Sciences, September 1, 1984
- James J. Gockowski, Graduate Research Assistant in Agricultural Economics, January 4, 1984
- W. Robert Goodman, Graduate Research Assistant in Agricultural Economics, January 1, 1984
- J.G. Graveel, Assistant Professor in Plant and Soil Science, March 1, 1984
- James P. Groton, Jr., Graduate Research Assistant in Forestry, Wildlife, and Fisheries, January 1, 1984
- J.A. Hale, Graduate Research Assistant in Plant and Soil Science, September 1, 1984
- J.G. Hall, Graduate Research Assistant in Agricultural Engineering, February 6, 1984
- Bruce C. Hastings, Graduate Research Assistant in Forestry, Wildlife, and Fisheries, September 1, 1984
- G.W. Haun, Graduate Research Assistant in Plant and Soil Science, September 12, 1984
- J.W. Hitch, Research Assistant in Agricultural Engineering, October 1, 1984
- D.G. Holland, Graduate Research Assistant in Plant and Soil Science, March 26, 1984
- Horton, Jane B., Graduate Research Assistant in Entomology and Plant Pathology, October 15, 1984
- Teri L. Ingle, Graduate Research Assistant in Animal Science, September 7, 1984
- T.L. Jenkins, Graduate Research Assistant in Food Technology and Science, January 1, 1984
- J.R. Jones, Graduate Research Assistant in Plant and Soil Science, September 17, 1984
- Peter I. Kalla, Graduate Research Assistant in Forestry, Wildlife, and Fisheries, August 1, 1984
- K.A. Lawton, Graduate Research Assistant in Ornamental Horticulture and Landscape Design, January 1, 1984
- Kevin T. Leahy, Graduate Research Assistant in Animal Science, June 1, 1984
- D.J. Libby, Graduate Research Assistant in Nutrition and Food Sciences, September 1, 1984
- M. Lisa Llewellyn, Graduate Research Assistant in Agricultural Economics, January 1, 1984
- A.M. Lujan, Graduate Research Assistant in Plant and Soil Science, August 27, 1984
- Deborah M. Markley, Assistant Professor in Agricultural Economics, May 28, 1984
- Shirley McGrew, Graduate Research Assistant in Animal Science, January 1, 1984
- Robert J. Menard, Graduate Research Assistant in Agricultural Economics, September 17, 1984
- D.L. Miller, Lab Assistant in Nutrition and Food Sciences, May 21, 1984
- Steven E. Montieth, Graduate Research Assistant in Agricultural Economics, March 26, 1984

- F.A. Mucke, Graduate Research Assistant in Agricultural Engineering, September 1, 1984
- Mark A. Muegge, Graduate Research Assistant in Entomology and Plant Pathology, June 11, 1984
- J.A. Mullins, Professor in Agricultural Engineering, May 1, 1984
- J.L. Oakes, Graduate Research Assistant in Plant and Soil Science, December 1, 1984
- Stephen Paul Oliver, Assistant Professor in Animal Science, June 1, 1984
- Peter Osei, Graduate Research Assistant in Animal Science, August 22, 1984
- R.D. Pace, Graduate Research Assistant in Food Technology and Science, March 22, 1984
- Stephen A. Pozzanghera, Graduate Research Assistant in Forestry, Wildlife, and Fisheries, July 15, 1984
- Scott N. Ralston, Graduate Research Assistant in Agricultural Economics, September 17, 1984
- Roland K. Roberts, Associate Professor in Agricultural Economics, October 1, 1984
- Douglas A. Rugh, Graduate Research Assistant in Agricultural Economics, May 1, 1984
- J.M. Ruter, Graduate Research Assistant in Ornamental Horticulture and Landscape Design, September 1, 1984
- L.A. Salamie, Graduate Research Assistant in Textiles, Merchandising, and Design, June 1, 1984
- Scott E. Schlarbaum, Assistant Professor in Forestry, Wildlife, and Fisheries, January 1, 1984
- Scott Sensenig, Graduate Research Assistant in Animal Science, September 1, 1984
- Tommy R. Smith, Graduate Research Assistant in Forestry, Wildlife, and Fisheries, January 1, 1984
- G.K. Stearman, Graduate Research Assistant in Plant and Soil Science, September 17, 1984
- S.E. Svenson, Graduate Research Assistant in Ornamental Horticulture and Landscape Design, September 1, 1984
- G.S. Swanson, Graduate Research Assistant in Plant and Soil Science, March 22, 1984
- R.B. Swanson, Graduate Research Assistant in Nutrition and Food Sciences, July 1, 1984
- D.W. Sykes, Graduate Research Assistant in Food Technology and Science, September 1, 1984
- Maurine E.P. Taylor, Assistant Communications Specialist in Communications, January 23, 1984
- Patrick Torre, Graduate Research Assistant in Animal Science, September 11, 1984
- E.D. Vories, Graduate Research Assistant in Agricultural Engineering, January 1, 1984
- John C. Waller, Associate Professor in Animal Science, April 1, 1984

- Janeen D. Ward, Graduate Research Assistant in Animal Science, June 1, 1984
- William J. Watson, Graduate Research Assistant in Forestry, Wildlife, and Fisheries, September 21, 1984
- Lisa A. Weaver, Graduate Research Assistant in Forestry, Wildlife, and Fisheries, September 20, 1984
- Julie A. Welch, Graduate Research Assistant in Agricultural Economics, March 22, 1984
- A.A. White, Graduate Research Assistant in Nutrition and Food Sciences, July 1, 1984
- G.L. White, Graduate Research Assistant in Nutrition and Food Sciences, July 1, 1984
- W.F. Whitehead, Graduate Research Assistant in Plant and Soil Science, March 15, 1984
- J.E. Wyatt, Associate Professor in Plant and Soil Science, November 1, 1984
- Kimberly Yost, Research Assistant in Animal Science, November 8, 1984
- Kenneth Zanzalari, Graduate Research Assistant in Animal Science, September 1, 1984

### *Terminations*

- N.H. Al-Mohammadi, Graduate Research Assistant in Plant and Soil Science, August 31, 1984
- J.R. Attewell, Graduate Research Assistant in Plant and Soil Science, January 31, 1984
- Anita M. Baker, Graduate Research Assistant in Entomology and Plant Pathology, June 8, 1984
- D.E. Bell, Graduate Research Assistant in Agricultural Engineering, June 30, 1984
- Rebecca A. Benda, Graduate Research Assistant in Forestry, Wildlife, and Fisheries, July 31, 1984
- Lisa G. Bettison, Graduate Research Assistant in Animal Science, August 31, 1984
- William N. Blisard, Graduate Research Assistant in Agricultural Economics, December 31, 1984
- E.L. Bradley, Graduate Research Assistant in Plant and Soil Science, July 31, 1984
- Allan J. Brody, Graduate Research Assistant in Forestry, Wildlife, and Fisheries, May 31, 1984
- Thomas Dale Bryson, Graduate Research Assistant in Animal Science, January 20, 1984
- Thomas J. Bundy, Graduate Research Assistant in Agricultural Economics, June 29, 1984
- F.D. Case, Associate Professor in Textiles, Merchandising, and Design, August 31, 1984
- Anthony P. Clevenger, Graduate Research Assistant in Forestry, Wildlife, and Fisheries, July 15, 1984
- A.D. Cockrel, Graduate Research Assistant in Ornamental Horticulture and Landscape Design, March 31, 1984

Russell E. Coleman, Graduate Research Assistant in Entomology and Plant Pathology, August 31, 1984

Neal C. Davis, Graduate Research Assistant in Agricultural Economics, March 16, 1984

W.L. Dodson, Graduate Research Assistant in Nutrition and Food Sciences, August 31, 1984

Edward F. Dougal, Assistant Professor in Forestry, Wildlife, and Fisheries, April 13, 1984

Joyce Holladay Doyle, Graduate Research Assistant in Entomology and Plant Pathology, August 31, 1984

Jack J. Glisson, Graduate Research Assistant in Animal Science, May 7, 1984

Joey M. Gross, Graduate Research Assistant in Agricultural Economics, December 31, 1984

James P. Groton Jr., Graduate Research Assistant in Forestry, Wildlife, and Fisheries, August 31, 1984

Peggy J. Hamlett, Graduate Research Assistant in Animal Science, May 16, 1984

G.E. Hanning, Graduate Research Assistant in Plant and Soil Science, August 24, 1984

Cynthia G. Hart, Graduate Research Assistant in Agricultural Economics, April 30, 1984

Lynne B. Holliday, Graduate Research Assistant in Agricultural Economics, January 31, 1984

Randy K. Holliman, Graduate Research Assistant in Agricultural Economics, December 31, 1984

J. Thomas Ingram, Graduate Research Assistant in Agricultural Economics, December 31, 1984

L.S. Jeffery, Professor in Plant and Soil Science, August 17, 1984

P.A. Joshi, Graduate Research Assistant in Plant and Soil Science, September 30, 1984

Christian J. Keller, Graduate Research Assistant in Forestry, Wildlife, and Fisheries, June 15, 1984

T.L. Knox, Graduate Research Assistant in Food Technology and Science, October 5, 1984

K.K. Leonas, Graduate Research Assistant in Textiles, Merchandising, and Design, May 31, 1984

L.D. Lester, Graduate Research Assistant in Ornamental Horticulture and Landscape Design, August 31, 1984

Thomas A. Levis, Graduate Research Assistant in Agricultural Economics, September 1, 1984

Robert J. Longwitz, Graduate Research Assistant in Forestry, Wildlife, and Fisheries, September 20, 1984

T.J. Lowe, Graduate Research Assistant in Food Technology and Science, July 13, 1984

J.E. Maples, Research Assistant in Agricultural Engineering, August 24, 1984

- Emily A. McClain, Graduate Research Assistant in Agricultural Economics, September 1, 1984
- J.R. McCurley, Research Associate in Animal Science, December 31, 1984
- Kathlyne A. McGee, Graduate Research Assistant in Forestry, Wildlife, and Fisheries, March 31, 1984
- Kathryn McKim, Graduate Research Assistant in Animal Science, August 31, 1984
- Charles E. Meier, Graduate Research Assistant in Agricultural Economics, June 30, 1984
- Tanya A. Minton, Graduate Research Assistant in Forestry, Wildlife, and Fisheries, March 16, 1984
- R.L. Mitchell, Graduate Research Assistant in Plant and Soil Science, December 31, 1984
- G.K. Palmer, Graduate Research Assistant in Plant and Soil Science, August 23, 1984
- S.L. Pyle, Graduate Research Assistant in Plant and Soil Science, January 31, 1984
- P.W. Ramsey, Graduate Research Assistant in Plant and Soil Science, January 20, 1984
- Chris K. Reynolds, Graduate Research Assistant in Animal Science, December 31, 1984
- T.H. Rhew, Graduate Research Assistant in Nutrition and Food Sciences, August 31, 1984
- W.T. Roberts, Graduate Research Assistant in Food Technology and Science, December 31, 1984
- R.A. Ruark, Graduate Research Assistant in Nutrition and Food Sciences, August 31, 1984
- J. L. Sanders, Graduate Research Assistant in Ornamental Horticulture and Landscape Design, September 14, 1984
- D.A. Schoenrock, Graduate Research Assistant in Food Technology and Science, June 30, 1984
- Tina Shipley, Graduate Research Assistant in Animal Science, December 21, 1984
- S.L. Shoulders, Graduate Research Assistant in Agricultural Engineering, August 31, 1984
- Tommy R. Smith, Graduate Research Assistant in Forestry, Wildlife, and Fisheries, August 31, 1984
- Carroll M. Sasscer, Research Associate in Agricultural Economics, August 15, 1984
- Gary P. Tanner, Graduate Research Assistant in Forestry, Wildlife, and Fisheries, June 30, 1984
- G.C. Viglietti, Graduate Research Assistant in Nutrition and Food Sciences, June 30, 1984
- G.R. Walker, Graduate Research Assistant in Agricultural Engineering, June 18, 1984
- S.H. Wang, Graduate Research Assistant in Plant and Soil Science, January 31, 1984
- P.S. Wey, Graduate Research Assistant in Textiles, Merchandising, and Design, December 31, 1984
- J.E. Wright, Graduate Research Assistant in Nutrition and Food Sciences, June 30, 1984

***Change of Title***

- W.L. Backus to Graduate Research Assistant in Animal Science, January 1, 1984
- D.E. Deyton to Associate Professor of Plant and Soil Science, July 1, 1984
- Morgan D. Gray, to Computer Programmer/Analyst in Agricultural Economics, July 1, 1984
- H.G. Kattesh to Associate Professor in Animal Science, July 1, 1984
- Paris L. Lambdin, to Professor in Entomology and Plant Pathology, July 1, 1984
- M.J. Montgomery to Coordinator of the Capital Campaign, Office of the Vice President for Agriculture, April 1, 1984
- John R. Mount to Associate Professor in Food Technology and Science, July 1, 1984
- C.A. Mullins to Professor of Plant and Soil Science, July 1, 1984
- William M. Park, to Associate Professor in Agricultural Economics, July 1, 1984
- W.L. Parks to Professor and Acting Head of Department of Plant and Soil Science, July 1, 1984
- F.D. Tompkins, from Associate Professor to Professor in Agricultural Engineering, July 1, 1984
- D.R. West to Associate Professor of Plant and Soil Science, July 1, 1984
- Glen D. Whipple, to Associate Professor in Agricultural Economics, July 1, 1984
- L.R. Wilhelm, from Associate Professor to Professor in Agricultural Engineering, July 1, 1984
- J.D. Wolt to Associate Professor of Plant and Soil Science, July 1, 1984

***Retirements***

- H.C. Kincer, Assistant Professor of Plant and Soil Science, March 31, 1984
- Howard E. Reed, Associate Professor, Department of Entomology and Plant Pathology, June 29, 1984
- L.F. Seatz, Professor and Head of Department of Plant and Soil Science, June 30, 1984

***Transfers***

- David B. Eastwood from Associate Professor, Child and Family Studies, to Associate Professor, Agricultural Economics and Rural Sociology, September 1, 1984